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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/921,695	08/06/2001	George Johan Peter Britovsek	01435.0121	8053

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EXAMINER

LEE, RIP A

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 03/25/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/921,695

Applicant(s)

BRITOVSEK ET AL.

Examiner

Rip A. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7,20 and 21 is/are rejected.
- 7) ☒ Claim(s) 1,3,4,8-19 and 22 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: (i) insert “compound” after the word “alkyl” on line 7 and on line 9, (ii) insert the word “complex” after the word “metal” on line 9 and on line 10; the catalyst does not contain metals in the elemental state as the wording might imply, and (iii) delete “suitable” on line 11; the activator would not be used if it were not “suitable” to the invention. Appropriate corrections are required.
2. Claim 4 is objected to because of the following informalities: Place the recitation starting on line 24 into proper Markush group format. According to MPEP 2173.05(h), when materials are so related as to constitute a proper Markush group, they may be recited as, “wherein R is a material selected from the group consisting of A, B, C, and D,” or “wherein R is A, B, C, or D.” Appropriate correction is required.
3. Claim 8 is objected to because of the following informalities: The word “may” introduces uncertainty to the claim. The metallocene contains at least one Cp ring, or it does not. Metallocenes, *ipso facto*, contain Cp rings; thus, use of the word “may” is incorrect.
4. Claim 9 is objected to because of the following informalities: Place the recitation starting on line 13 into proper Markush group format (*vide supra*).

5. Claim 10 is objected to because of the following informalities: (i) an alkenyl group contains at least 2 carbon atoms, an aryl group contains at least six carbon atoms, and alkylaryl, and arylalkyl groups contain at least seven carbon atoms. Therefore, the blanket description “1 to 20 carbon atoms” which follows the listing of these substituents is incorrect, (ii) place the recitation starting on line 27 into proper Markush group format, and (iii) the recitation on line 30 is inconsistent with the formula shown in the claim – the allowed condition, $s = 0$, $p = 0$, and $x = 1$, renders the valency of M^* not electronically satisfied.

6. Claims 12-15 are objected to because of the following informalities: The formula designations (I), (II), (III), and (IV) associated with the structures need to accompany the figures.

7. Claim 12 is objected to because of the following informalities: (i) place the recitations starting on lines 19 and 21 into proper Markush group format and (ii) the antecedent to which the noun “ones” refers is not clear (see line 22). Appropriate correction is required.

8. Claim 13 is objected to because of the following informalities: (i) place the recitations starting on lines 8 and 10 into proper Markush group format and (ii) the antecedent to which the noun “ones” refers is not clear (see line 11).

9. Claim 14 is objected to because of the following informalities: Place the recitations starting on lines 22 and line 1, page 27, into proper Markush group format.

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10. Claim 15 is objected to because of the following informalities: Place the recitations starting on lines 16 and 18 into proper Markush group format.

11. Claim 15 is objected to because of the following informalities: The formula is not entirely understood. First, it is not clear why the oxidation state needs to accompany the metal in the structure. The use of [T] neither serves to clarify or further define the compound. Therefore, omission of this superfluous designation is strongly suggested. Secondly, if (T/b) represents a coefficient for the number of X groups, then it should appear after, *i.e.*, to the right side of, character X. Finally, Applicant's use of the fraction T/b is not understood. Clarification is requested.

12. Claims 16 and 17 are objected to because of the following informalities: Delete the word "independently" since all A groups, A¹, A², and A³ are the same. Use of the term "are each independently" adds nothing to the claim other than to impair it grossly with pompous verbosity.

13. Claim 17 is objected to because of the following informalities: (i) Place the recitations starting on line 3 into proper Markush group format and (ii) substituents R¹ to R³ are not in the structure provided.

Claim Rejections - 35 USC § 112

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what the Applicant intends to encompass as inventive by use of the phrase, "any other ligand capable of η^5 -bonding." Without qualification, the phrase renders the claims vague and indefinite.

16. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what the Applicant intends to encompass as inventive by use of the term, "bridging group." Since this described hundreds, if not thousands, of molecular fragments, without qualification, the phrase renders the claims vague and indefinite.

17. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The terms "*substantially* Poisson-like" and "*substantially* Schulz-Flory-like" are relative terms which render the claim indefinite. The terms are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

20. Claims 1, 2, 4-7, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,449,850 to Young *et al.*

Young *et al.* discloses a catalyst system containing a group 4 transition metal and a second catalyst component such as R_2Zn wherein R is a C_1 - C_{20} alkyl (col. 2, line 18). A process in which C_3 and higher alpha-olefins are contacted with the catalyst is described (claim 1). Use of hydrocarbon solvent is described in detail (col. 4, lines 20-25). Products include olefins and higher primary alcohols (col. 2, lines 35-45). The reference does not state specifically that a zinc alkyl chain growth mechanism is operative. However, in view of the fact that (a) the catalyst components are essentially the same as those recited in the claim, (b) the process involves contacting the same alpha-olefins with the catalyst, and (c) the process results in the formation of oligomers, one having ordinary skill in would find it obvious that chain growth products derived

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from zinc are being formed in active the catalyst mixture. Since the PTO can not perform experiments, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

21. Claims 1, 2, 4-7, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 91/02707 to Mathys.

Mathys teaches a process for making alpha-olefin oligomers by contacting ethylene with a catalyst containing a group 4 transition metal and a second catalyst component such as R_2Zn wherein R is a C_1 - C_{20} alkyl (claim 1). Use of hydrocarbon solvent is also described (claim 8). The ratio of the second component to the first (group 4 metal) component is 1:1 to 50:1 (page 10, line 16). The reference does not state specifically that a zinc alkyl chain growth mechanism is operative. However, in view of the fact that (a) the catalyst components are essentially the same as those recited in the claim, (b) the process involves contacting the same alpha-olefins with the catalyst, and (c) the process results in the formation of oligomers, one having ordinary skill in would find it obvious that chain growth products derived from zinc are being formed in active the catalyst mixture. Since the PTO can not perform experiments, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

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22. Claims 3, 8-19, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

23. The prior art made of record but not relied upon is considered pertinent to the Applicant's disclosure. The following references relate olefin polymerization catalyst systems which contain dialkylzinc as an essential component.

U.S. Patent No. 6,245,869 to Debras *et al.*

U.S. Patent No. 5,068,489 to Edwards *et al.*

U.S. Patent No. 5,034,483 to Miro *et al.*

U.S. Patent No. 4,335,016 to Dombro

U.S. Patent No. 4,308,369 to Shipley *et al.*

U.S. Patent No. 4,063,009 to Ziegler *et al.*

EP 0 464 744 to Wagner *et al.*

EP 0 295 960 to Young *et al.*

The following references relate to metal complexes of the present invention.

U.S. Patent No. 6,461,994 to Gibson *et al.*

U.S. Patent No. 6,451,939 to Bitovsek *et al.*

U.S. Patent No. 6,333,292 to Gibson *et al.*

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (703)306-0094. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (703)308-2450. The fax phone number for the organization where this application or proceeding is assigned is (703)746-7064. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

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March 13, 2003



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